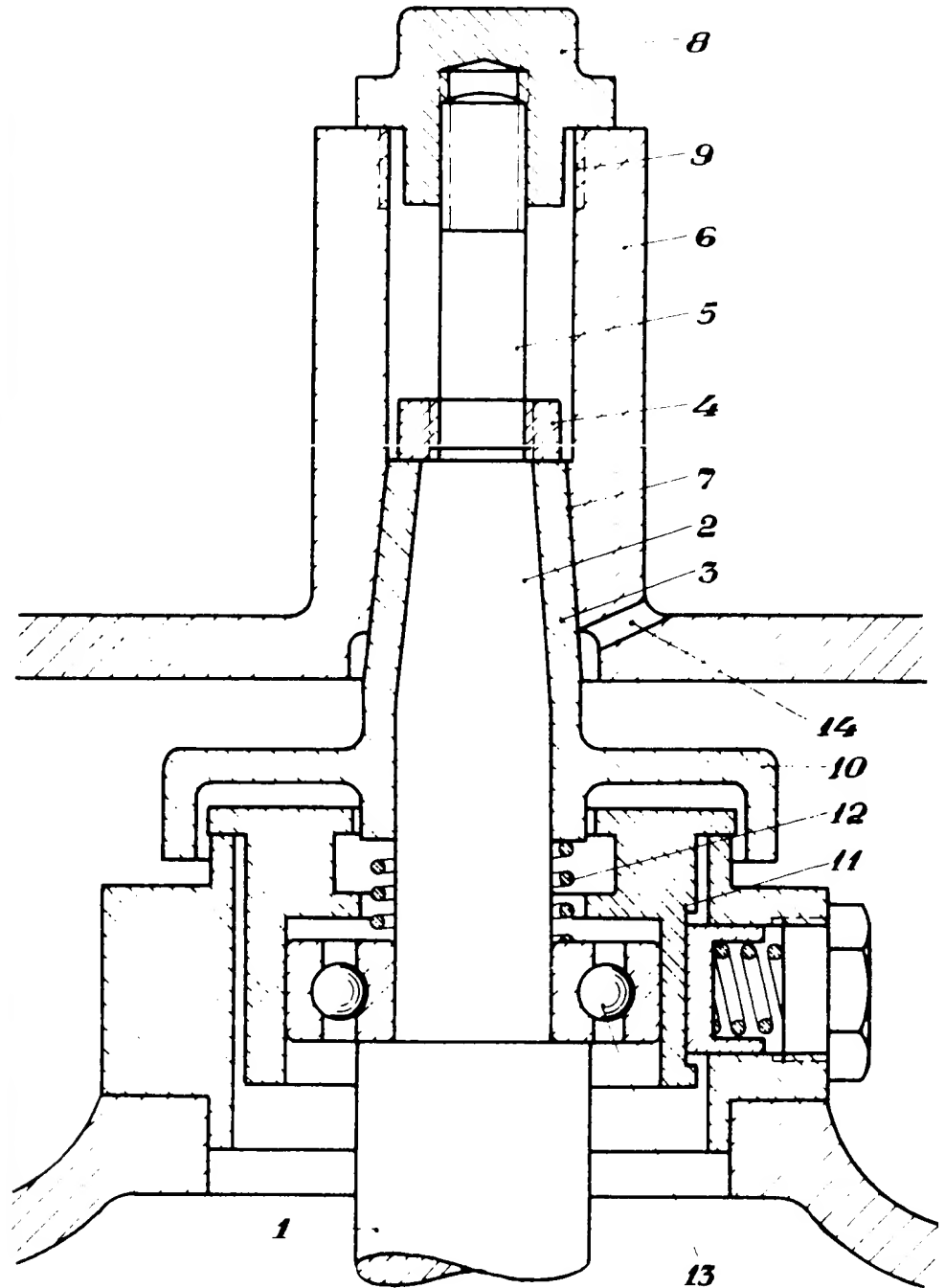


[This Drawing is a reproduction of the Original on a reduced scale.]



*Fig. 1*

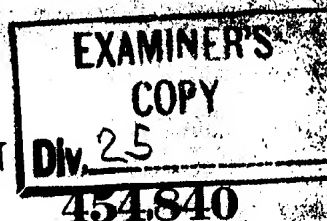




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# PATENT SPECIFICATION

Convention Date (Germany): May 3, 1935.  
Application Date (In United Kingdom): May 4, 1936.  
Complete Specification Accepted: Oct. 8, 1936.



## COMPLETE SPECIFICATION

### Improvements in Centrifugal Separators

We, BERGEDORFER EISENWERK AKTIEN-GESELLSCHAFT ASTRA-WERKE, of Berge-dorf-Hamburg, Germany, a German Com-pany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly de-scribed and ascertained in and by the following statement:—

The purification of certain kinds of liquids by centrifugal treatment is often carried out in so-called self-draining centri-fugal bowls which are provided with drain openings in the bottom. When the bowl is in operation no liquid flows out through these drain openings, but when the bowl is stopped and the centrifugal force acting on the liquid ceases, the level of the liquid is determined only by the force of gravity so that the bowl is then completely emptied through the said drain openings. In order to prevent liquid from flowing out of the bowl during operation, the openings must be located closer to the rotation axis than the outlet openings for the treated liquid, and for this reason are generally positioned in the immediate proximity of the bowl spindle.

With this kind of bowl the bowl spindle is exposed to the liquid which flows out of the drain openings and is consequently subject to corrosion to a greater or lesser extent according to the nature of the liquid under treatment.

In some cases the spindle of a bowl which is not provided with drain openings is also exposed to corrosion by the action of the separated liquid since with this type of centrifugal bowl it is necessary to remove the bowl from the spindle for cleaning purposes, so that the end of the spindle becomes unprotected and is exposed to the liquid under treatment which may drip down from the fixed supply pipe, which is often located directly above it. Thus the object of the present invention is to protect the bowl spindles of centrifugal separators from the liquid under treatment.

The present invention is concerned more particularly with centrifugal separators of the type in which the bowl is provided with a nave having an inner conical surface and which fits over an external conical surface of the spindle, and the invention

consists in the provision on the spindle of a substantially inelastic sleeve-shaped lining, which is provided with a conical surface which fits in the conical seat in the bowl nave.

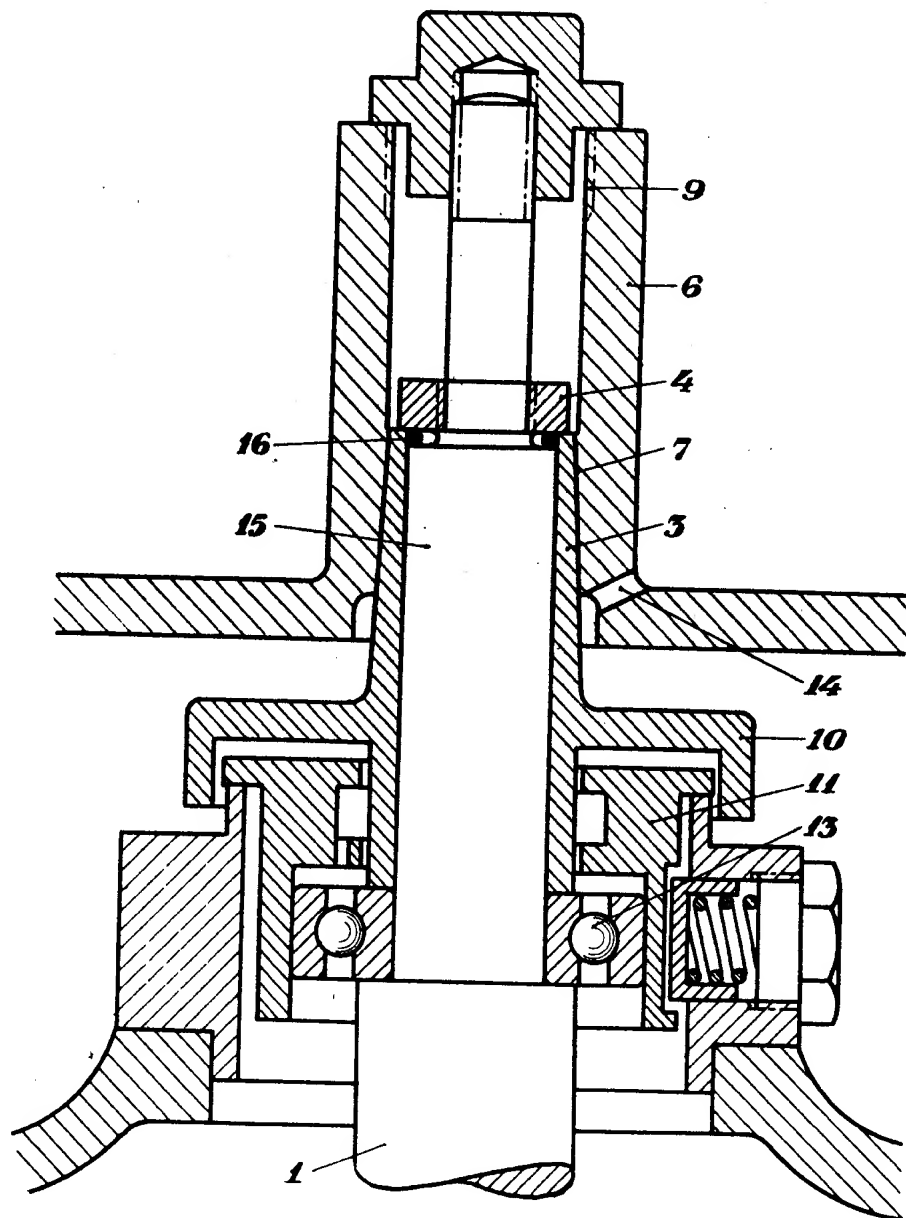
The sleeve is suitably made integral with a radial protecting collar covering the top bearing and may be fixed to the spindle either by being provided with an inner conical surface fitting an outer conical surface of the spindle, or by being provided with the inner cylindrical surface fitting a cylindrical portion of the spindle. In the latter case the sleeve is made suffi-ciently thin to enable it to be compressed by the conical seat of the bowl when this is pressed down on the sleeve. In this manner a tight connection and a good contact are obtained between the sleeve with an inner cylindrical surface and the cylindrical spindle.

The accompanying drawings show by way of example two embodiments of the invention. In Figure 1 the spindle 1 is provided with a conical portion 2, on which is located a sleeve 3 suitably made of corrosion resisting material and having an inner conical surface, said sleeve being kept in position on the upper end 5 of the spindle by a nut 4. The bowl nave 6 is provided with a conical seat 7 which fits around the sleeve 3, and is tightly pressed on said sleeve by a nut 8. The upper part of the nave is provided internally with a thread 9 for removing the bowl from the spindle with the aid of a separate threaded part, (not shown) the said part thereby being supported against the upper end of the cylindrical portion of the spindle.

At the lower end the sleeve 3 is pro-vided with a horizontal radial protecting collar 10 which covers the top bearing 11. The sleeve 3 also keeps the ball bearing 13 in position against a shoulder on the spindle by means of a spring 12. In the bottom of the bowl one or more channels 14 are provided, the orifices of which are situ-ated close to the sleeve 3. It is evident that, when liquid flows out of the channels 14, it follows the sleeve 3 to the collar 10 whence it flows out into the bowl housing outside the top bearing. The spindle is thus absolutely protected from contact

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2 SHEETS  
SHEET 2



*Fig. 2*